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EXAMINER

SHERMAN, STEPHEN G

ART UNIT

PAPER NUMBER

2629

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/606,832

Applicant(s)

KIM ET AL.

Examiner

Stephen G. Sherman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9-12, 14-16 and 18-24 is/are rejected.
- 7) ☒ Claim(s) 4, 8, 13 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

1. This office action is in response to the amendment filed the 11 April 2007.

Claims 1-24 are pending.

### *Response to Arguments*

2. Applicant's arguments filed with respect to claims 1-3, 5-7, 9-12, 14-16 and 18-24 have been fully considered but they are not persuasive.

On page 15 of the applicant's response the applicant starts the argument against the rejection of the claims under 35 USC § 103(a). The applicant states only that the signal disclosed by Payne for disabling the inverter is different from the "inverter ON/OFF signal" recited by independent claims 1, 9 and 18 and that the inverter of Okita is different from the inverter of the present invention from a functional point of view. The applicant then states that the combined teachings of Payne and Okita fail to establish a prima facie case for obviousness with regard to claims 1-24. The examiner respectfully disagrees.

With respect to the Payne reference, the examiner would like to remind the applicant that the Payne was not used to teach the inverter ON/OFF signal, but instead was used to teach the shutdown ON/OFF signal. The examiner agrees with the applicant that in terms of the inventions, the signal disclosed by Payne for disabling the inverter is different from the "shutdown ON/OFF signal" in the applicant's invention,

however, the **claims** only state that there is a shutdown circuit that is capable of monitoring for a malfunction in response to an external shutdown ON/OFF signal, which is taught by Payne. The specification is not the measure of invention. Therefore, limitations contained therein cannot be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).

With respect to the Okita reference, the examiner agrees that the function of the applicant's low path switching part is different than the function of Okita's low path switching part, however, the **claims** only state that there is a low path switching part that connects or disconnects the low path of the backlight lamp with ground in response to an external inverter ON/OFF signal, which is taught by Okita. The specification is not the measure of invention. Therefore, limitations contained therein cannot be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1968).

The examiner would also like to note that there is no claimed functionality between the shutdown circuit and the low path switching part in the claims. There are also no claim limitations within the independent claims that define what the shutdown circuit is, or what the low path switching part is. Therefore, the low path switching part can be anything that achieves the functionality as required by the **claims** where in this case connects or disconnects the low path of the lamp to ground, which the switches shown in Okita do. Similarly, the shutdown circuit can be anything that achieves the functionality of receiving a voltage through the low path to the lamp to monitor for a malfunction in response to an ON/OFF signal, which is shown in Payne. **The**

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**combination of the two references only needs to teach the claims not the applicant's invention.**

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 1 recites the limitation "the plurality of backlight lamp" in line 10. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-7, 9-12, 14-16 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Payne (US 5,420,779) in view of Okita (US 6,023,131).

**Regarding claim 1**, Payne discloses an inverter device (Figure 1, item 11) for a liquid crystal display, comprising:

a transformer (Figure 2C, item T1) for receiving an inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage and supplying the AC lamp drive voltage to a high path of a backlight lamp (Column 5, lines 7-14); and

a low path switching part (Figures 2A-2D, items Q2 and QX1 are connected to the low path of the backlight lamp CCFL through connection 108.); and

a shutdown circuit (Figure 1, item 15) for receiving a voltage input (Figure 1, item 106) through the low path of the backlight lamp (Figure 1, item 108) to monitor for a malfunction of the backlight lamp in response to an external shutdown ON/OFF signal (Column 3, lines 33-37. The examiner interprets the signal sent to disable the inverter circuit to be the shutdown ON/OFF signal).

Payne fails to teach of an inverter device for a liquid crystal display comprising a low path switching part connecting or disconnecting a low path of a backlight lamp with a ground voltage source in response to an external inverter ON/OFF signal.

Okita disclose of an inverter device for a liquid crystal display (Figure 1) comprising:

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a low path switching part connecting or disconnecting a low path of a backlight lamp with a ground voltage source in response to an external inverter ON/OFF signal (Figure 1 shows a low path switching part as switches 8, 9 and 10 which selectively connect the backlight of the lamps 5, 6 and 7 respectively to ground in response to an inverter ON/OFF signal, which is explained in column 3, lines 4-6 and lines 24-35.

Figure 2 shows that when the inverter is ON, which is in response to the state of switch 2 to control the inverter from being ON/OFF, i.e. an inverter ON/OFF signal, then the switches 8, 9 and 10 are controller to be ON/OFF.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to provide the low path switching part as taught by Okita in the inverter device taught by Payne to ensure that it is possible to control a plurality of lamps with only one inverter in order to realize an inexpensive, compact system where useless power consumption can be prevented.

***Regarding claim 2***, Payne and Okita disclose the device according to claim 1.

Payne also discloses wherein the low path switching part includes:

a first driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 can supply a voltage to the low path of the backlight lamp in response to the ON/OFF signal, ENABLE. Q5 receives the ON/OFF signal through U1 connection 1, then the driver, Q5 and Q6, supplies the inverter drive voltage, VCC, which is also received through U1

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connection 1, to the first switching part which is connected to the low path of the backlight lamp); and

a first switching part (Figures 2A, 2B, 2C and 2D, items QX1 and Q2) connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the first driver (Figures 2A, 2B, 2C and 2D, items QX1 and Q2 are connected to the low path of the backlight lamp through the connection between Q2 and Q14, Q14 being connected to item 108, the low path of the lamp. Q2 is then connected to QX1, which is connected to ground. Q2 receives an output signal from Q6 and Q5, the driver, which would therefore allow Q2 and QX1 to connect 108, the low path of the backlight lamp, to ground).

***Regarding claim 3,*** Payne and Okita disclose the device according to claim 2.

Payne also discloses the first driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) includes:

a first switch being switched in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

a second switch supplying the inverter drive voltage to the first switching part in response to a state of the first switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter drive voltage, VCC, which it receives through U1 connection 1, to the first switching part, Q2 and Qx1).



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**Regarding claim 5**, Payne and Okita disclose the device according to claim 1.

Payne also discloses wherein the shutdown circuit includes:

a second driver (Figures 2A, 2B, 2C and 2D, items Q6 and Q5) selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the-shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 supply the inverter drive voltage VCC through U1 connection 1 to the low path of the backlight lamp through Q2 in response to ENABLE which is received through U1 connection 1);

a second switching part (Figures 2A, 2B, 2C and 2D, items Q13 and Q14) providing one of an enabling and disabling shutdown function for monitoring for the presence or absence of a malfunction of the backlight lamp in response to an output signal of the second driver (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are a part of item 15 of Figure 1. Column 3, lines 33-37 states that a detection circuit sends a signal to disable the inverter circuit if a malfunction is detected. The examiner interprets this as providing either an enabling or disabling function, and as seen in Figures 2A, 2B, 2C and 2D, Q13 can receive a signal from Q6 of the second driver through its connection to Q2); and

an error amplifier monitoring for the presence or absence of a malfunction of the backlight lamp when the shutdown function is enabled by the second switching part (Figure 1, items 15 and 106 and column 5, lines 24-25. The examiner interprets this to mean that monitoring is occurring at all times which would also be when the shutdown function is enabled by the second switching part).

**Regarding claim 6**, Payne and Okita disclose the device according to claim 5.

Payne also discloses wherein the second driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) includes:

a third switch being switched in response to the shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

a fourth switch supplying the inverter drive voltage to the second switching part in response to a state of the third switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter drive voltage, VCC, which it receives through U1 connection 1, to the second switching part, Q13 and Q14).

**Regarding claim 7**, Payne and Okita disclose the device according to claim 6.

Payne also discloses wherein the second switching part (Figures 2A, 2B, 2C and 2D, items Q13 and Q14) includes:

third and fourth field effect transistors (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are FETs) connected in series between the low path of the backlight lamp and the ground voltage source for connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the fourth switch (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are connected to the low path of the backlight lamp through Q14 which is connected to item 108, the low path of the lamp. Q14 is connected to ground through C9. Q13 receives an output signal from Q6, the second

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switch, through Q2 which would therefore allow Q13 and Q14 to connect 108, the low path of the backlight lamp, to ground); and

a resistor (Figure 2D, item R3) connected between the low path of the backlight lamp and the third field effect transistor (Figures 2A, 2B, 2C and 2D, item R3 is connected to 108, the low path of the backlight lamp, and also connected to the first field effect transistor, Q14 through line 106).

**Regarding claim 9**, Payne discloses a backlight lamp monitoring device for a liquid crystal display, comprising:

a backlight lamp (Figure 1, CCFL); and

an inverter (figure 1, item 11) receiving an inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage, and supplying the AC lamp drive voltage to a high path of the backlight lamp (Column 5, lines 7-14); and

the inverter receives a voltage input through the low path of the backlight lamp to perform a shutdown function for monitoring for the presence or absence of a malfunction of the backlight lamp in response to an external shutdown ON/OFF signal (Figure 1, item 15 receives a voltage input through line 106 from the backlight lamp connection 108. In column 3, lines 33-37 the examiner interprets the signal sent to disable the inverter circuit to be the shutdown ON/OFF signal).

Payne fails to teach of the backlight lamp monitoring device for a liquid crystal display comprising a plurality of backlight lamps, wherein the inverter selectively

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connect or disconnect a low path of each of a backlight lamp with a ground voltage source in response to an external inverter ON/OFF signal.

Okita discloses a backlight lamp device for a liquid crystal display comprising a plurality of backlight lamps, wherein the inverter selectively connects a low path of each of a backlight lamp with a ground voltage source in response to an external inverter ON/OFF signal (Figure 1 shows a low path switching part as switches 8, 9 and 10 which selectively connect the backlight of the lamps 5, 6 and 7 respectively to ground in response to an inverter ON/OFF signal, which is explained in column 3, lines 4-6 and lines 24-35. Figure 2 shows that when the inverter is ON, which is in response to the state of switch 2 to control the inverter from being ON/OFF, i.e. an inverter ON/OFF signal, then the switches 8, 9 and 10 are controller to be ON/OFF.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to provide the low path switching part as taught by Okita in the inverter device taught by Payne to ensure that it is possible to control a plurality of lamps with only one inverter in order to realize an inexpensive, compact system where useless power consumption can be prevented.

Payne and Okita fail to teach of the backlight lamp monitoring device for a liquid crystal display comprising a plurality of inverters, each receiving an inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage, and supplying the AC lamp drive voltage to a high path of each of the backlight lamps.

Okita does disclose in a different embodiment of the backlight lamp monitoring device for a liquid crystal display comprising a plurality of inverters, each receiving an

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inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage, and supplying the AC lamp drive voltage to a high path of each of the backlight lamps (Figure 4 and column 2, lines 12-21 explain that there are individual inverters 3a, 3b and 3c for each of the lamps 5, 6 and 7 respectively.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to provide an inverter for each of the backlight lamps as taught by Okita in the inverter device taught by the combination of Payne and Okita to order to better control the light of the lamps by individually controlling the supplied power source to the respective inverters.

***Regarding claim 10***, Payne and Okita disclose the device according to claim 9.

Payne also discloses each of the inverters including:

a transformer (Figure 2C, item T1) for receiving an inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage and supplying the AC lamp drive voltage to a high path of a backlight lamp (Column 5, lines 7-14); and

a low path switching part (Figures 2A-2D, items Q2 and QX1 are connected to the low path of the backlight lamp CCFL through connection 108.); and

a shutdown circuit (Figure 1, item 15) for receiving a voltage input (Figure 1, item 106) through the low path of the backlight lamp (Figure 1, item 108) to monitor for a malfunction of the backlight lamp in response to an external shutdown ON/OFF signal (Column 3, lines 33-37. The examiner interprets the signal sent to disable the inverter circuit to be the shutdown ON/OFF signal).

Okita also discloses a low path switching part selectively connecting a low path of a backlight lamp with a ground voltage source in response to an external inverter ON/OFF signal (Figure 1 shows a low path switching part as switches 8, 9 and 10 which selectively connect the backlight of the lamps 5, 6 and 7 respectively to ground in response to an inverter ON/OFF signal, which is explained in column 3, lines 4-6 and lines 24-35. Figure 2 shows that when the inverter is ON, which is in response to the state of switch 2 to control the inverter from being ON/OFF, i.e. an inverter ON/OFF signal, then the switches 8, 9 and 10 are controller to be ON/OFF.).

***Regarding claim 11***, Payne and Okita disclose the device according to claim 10.

Payne also discloses wherein the low path switching part includes:

a first driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 can supply a voltage to the low path of the backlight lamp in response to the ON/OFF signal, ENABLE. Q5 receives the ON/OFF signal through U1 connection 1, then the driver, Q5 and Q6, supplies the inverter drive voltage, VCC, which is also received through U1 connection 1, to the first switching part which is connected to the low path of the backlight lamp); and

a first switching part (Figures 2A, 2B, 2C and 2D, items QX1 and Q2) connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the first driver (Figures 2A, 2B, 2C and 2D, items QX1 and Q2 are connected

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to the low path of the backlight lamp through the connection between Q2 and Q14, Q14 being connected to item 108, the low path of the lamp. Q2 is then connected to QX1, which is connected to ground. Q2 receives an output signal from Q6 and Q5, the driver, which would therefore allow Q2 and QX1 to connect 108, the low path of the backlight lamp, to ground).

**Regarding claim 12**, Payne and Okita disclose the device according to claim 11.

Payne also discloses the first driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) includes:

a first switch being switched in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

a second switch supplying the inverter drive voltage to the first switching part in response to a state of the first switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter drive voltage, VCC, which it receives through U1 connection 1, to the first switching part, Q2 and Qx1).

**Regarding claim 14**, Payne and Okita disclose the device according to claim 10.

Payne also discloses wherein the shutdown circuit includes:

a second driver (Figures 2A, 2B, 2C and 2D, items Q6 and Q5) selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the-shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 supply the

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inverter drive voltage VCC through U1 connection 1 to the low path of the backlight lamp through Q2 in response to ENABLE which is received through U1 connection 1);

a second switching part (Figures 2A, 2B, 2C and 2D, items Q13 and Q14) providing one of an enabling and disabling shutdown function for monitoring for the presence or absence of a malfunction of the backlight lamp in response to an output signal of the second driver (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are a part of item 15 of Figure 1. Column 3, lines 33-37 states that a detection circuit sends a signal to disable the inverter circuit if a malfunction is detected. The examiner interprets this as providing either an enabling or disabling function, and as seen in Figures 2A, 2B, 2C and 2D, Q13 can receive a signal from Q6 of the second driver through its connection to Q2); and

an error amplifier monitoring for the presence or absence of a malfunction of the backlight lamp when the shutdown function is enabled by the second switching part (Figure 1, items 15 and 106 and column 5, lines 24-25. The examiner interprets this to mean that monitoring is occurring at all times which would also be when the shutdown function is enabled by the second switching part).

**Regarding claim 15**, Payne and Okita disclose the device according to claim 14.

Payne also discloses wherein the second driver (Figures 2A, 2B, 2C and 2D, items Q5 and Q6) includes:



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a third switch being switched in response to the shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

a fourth switch supplying the inverter drive voltage to the second switching part in response to a state of the third switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter drive voltage, VCC, which it receives through U1 connection 1, to the second switching part, Q13 and Q14).

**Regarding claim 16**, Payne and Okita disclose the device according to claim 15.

Payne also discloses wherein the second switching part (Figures 2A, 2B, 2C and 2D, items Q13 and Q14) includes:

third and fourth field effect transistors (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are FETs) connected in series between the low path of the backlight lamp and the ground voltage source for connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the fourth switch (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are connected to the low path of the backlight lamp through Q14 which is connected to item 108, the low path of the lamp. Q14 is connected to ground through C9. Q13 receives an output signal from Q6, the second switch, through Q2 which would therefore allow Q13 and Q14 to connect 108, the low path of the backlight lamp, to ground); and

a resistor (Figure 2D, item R3) connected between the low path of the backlight lamp and the third field effect transistor (Figures 2A, 2B, 2C and 2D, item R3 is

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connected to 108, the low path of the backlight lamp, and also connected to the first field effect transistor, Q14 through line 106).

**Regarding claim 18**, Payne discloses a method for monitoring a backlight lamp of a liquid crystal display, comprising:

receiving an inverter drive voltage, converting the received drive voltage into an AC lamp drive voltage and supplying the AC lamp drive voltage to a high path of a backlight lamp (Column 5, lines 7-14); and

receiving a voltage input (Figure 1, item 106) through the low path of the backlight lamp (Figure 1, item 108) to monitor for a malfunction of the backlight lamp in response to an external shutdown ON/OFF signal (Column 3, lines 33-37. The examiner interprets the signal sent to disable the inverter circuit to be the shutdown ON/OFF signal).

Payne fails to teach of the method comprising a plurality of backlight lamps and selectively connecting a low path of each of the backlight lamps with a ground voltage source in response to an external inverter ON/OFF signal.

Okita disclose of the method comprising a plurality of backlight lamps and selectively connecting a low path of each of the backlight lamps with a ground voltage source in response to an external inverter ON/OFF signal (Figure 1 shows a low path switching part as switches 8, 9 and 10 which selectively connect the backlight of the lamps 5, 6 and 7 respectively to ground in response to an inverter ON/OFF signal, which is explained in column 3, lines 4-6 and lines 24-35. Figure 2 shows that when the

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inverter is ON, which is in response to the state of switch 2 to control the inverter from being ON/OFF, i.e. an inverter ON/OFF signal, then the switches 8, 9 and 10 are controller to be ON/OFF.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to provide the method of selectively connecting the lamps to ground as taught by Okita in the method taught by Payne to ensure that it is possible to control a plurality of lamps with only one inverter in order to realize an inexpensive, compact system where useless power consumption can be prevented.

***Regarding claim 19***, Payne and Okita disclose the method according to claim 18.

Payne also discloses wherein the step of selectively connecting a low path includes:

selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 can supply a voltage to the low path of the backlight lamp in response to the ON/OFF signal, ENABLE. Q5 receives the ON/OFF signal through U1 connection 1, then the driver, Q5 and Q6, supplies the inverter drive voltage, VCC, which is also received through U1 connection 1, to the first switching part which is connected to the low path of the backlight lamp); and

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connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the first driver (Figures 2A, 2B, 2C and 2D, items QX1 and Q2 are connected to the low path of the backlight lamp through the connection between Q2 and Q14, Q14 being connected to item 108, the low path of the lamp. Q2 is then connected to QX1, which is connected to ground. Q2 receives an output signal from Q6 and Q5, the driver, which would therefore allow Q2 and QX1 to connect 108, the low path of the backlight lamp, to ground).

**Regarding claim 20**, Payne and Okita disclose the method according to claim 19.

Payne also discloses wherein the step of selectively supplying the inverter drive voltage includes:

switching a first switch in response to the inverter ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

supplying the inverter drive voltage to the first switching part in response to a state of the first switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter drive voltage, VCC, which it receives through U1 connection 1, to the first switching part, Q2 and Qx1).

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**Regarding claim 21**, Payne and Okita disclose the method according to claim 20.

Payne also discloses wherein the step of connecting the low path includes connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the second switch (Figures 2A, 2B, 2C and 2D, items QX1 and Q2 are connected to the low path of the backlight lamp through the connection between Q2 and Q14, Q14 being connected to item 108, the low path of the lamp. Q2 is then connected to QX1, which is connected to ground. Q2 receives an output signal from Q6, the second switch, which would therefore allow Q2 and QX1 to connect 108, the low path of the backlight lamp, to ground);

**Regarding claim 22**, Payne and Okita disclose the method according to claim 21.

Payne also discloses wherein the step of receiving a voltage input includes: selectively supplying the inverter drive voltage to the low path of the backlight lamp in response to the-shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, items Q5 and Q6 supply the inverter drive voltage VCC through U1 connection 1 to the low path of the backlight lamp through Q2 in response to ENABLE which is received through U1 connection 1);

providing one of an enabling and disabling shutdown function for monitoring for the presence or absence of a malfunction of the backlight lamp in response to an output signal of the second driver (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are a part

of item 15 of Figure 1. Column 3, lines 33-37 states that a detection circuit sends a signal to disable the inverter circuit if a malfunction is detected. The examiner interprets this as providing either an enabling or disabling function, and as seen in Figures 2A, 2B, 2C and 2D, Q13 can receive a signal from Q6 of the second driver through its connection to Q2); and

monitoring for the presence or absence of a malfunction of the backlight lamp when the shutdown function is enabled by the second switching part (Figure 1, items 15 and 106 and column 5, lines 24-25. The examiner interprets this to mean that monitoring is occurring at all times which would also be when the shutdown function is enabled by the second switching part).

***Regarding claim 23***, Payne and Okita disclose the method according to claim 22.

Payne also discloses wherein the step of selectively supplying the inverter drive voltage includes:

switching a third switch in response to the shutdown ON/OFF signal (Figures 2A, 2B, 2C and 2D, item Q5 is switched in response to ENABLE, the inverter ON/OFF signal, through U1 connection 1); and

supplying the inverter drive voltage to the second switching part in response to a state of the third switch (Figures 2A, 2B, 2C and 2D, item Q6 can supply the inverter

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drive voltage, VCC, which it receives through U1 connection 1, to the second switching part, Q13 and Q14).

**Regarding claim 24**, Payne and Okita disclose the method according to claim 23.

Payne also discloses wherein the step of providing one of an enabling and disabling shutdown function includes connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the fourth switch (Figures 2A, 2B, 2C and 2D, items Q13 and Q14 are connected to the low path of the backlight lamp through Q14 which is connected to item 108, the low path of the lamp. Q14 is connected to ground through C9. Q13 receives an output signal from Q6, the second switch, through Q2 which would therefore allow Q13 and Q14 to connect 108, the low path of the backlight lamp, to ground)

### ***Allowable Subject Matter***

8. Claims 4, 8, 13 and 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

**Regarding claims 4 and 13**, the primary reason for indicating allowable subject matter is the inclusion of the limitation of first and second field effect transistors connected in series between the low path of the backlight lamp to the ground voltage source for connecting the low path of the backlight lamp to the ground voltage source in response to an output signal of the second switch and a resistor connected between the low path of the backlight lamp and the first field effect transistor, which is not found singularly or in combination within the prior art.

**Regarding claims 8 and 17**, the primary reason for indicating allowable subject matter is the inclusion of the limitation of including a capacitor connected between a drain terminal of the third field effect transistor and a drain terminal of the fourth field effect transistor and also a capacitor connected between the drain terminal of the fourth field effect transistor and the ground voltage source for an inverter device of a liquid crystal display, of which could not be found singularly or in combination within the prior art.

### **Conclusion**

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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SS

7 May 2007

AMR A. AWAD  
SUPERVISORY PATENT EXAMINER  
*Amr A. Awad*